

A “Mirror for All Traitors”. Captured Ciphertexts from a Portuguese Spy in Dutch Brazil (1646)

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Abstract

A deciphering report found in the National Archives at The Hague presents an intriguing story. A Portuguese spy inside the walls of Recife gathered information about the Dutch defences and wrote it in encrypted letters addressed to the Portuguese rebels that besieged the heart of the Dutch West India Company (WIC) administration in Brazil. The encrypted letters were delivered to the Dutch authorities, who summoned a Jewish cryptanalyst to read them. The report of Abraham de Pina contains a detailed description of the process he used to decipher these letters and presents the complete content of all four ciphertexts. In this paper, we will reconstruct the events of this case and analyze the design of the nomenclature cipher used by the Portuguese rebels. We also will present the flow of information of these intercepted letters within the WIC in Brazil and between them and their company superiors, the Gentlemen XIX, in the Netherlands.

1 Introduction

A group of Portuguese collaborators in Brazil rebelled against the Dutch in 1645, starting a war to reclaim the territories occupied by the WIC (Dutch West Indies Company) since 1630.¹ The conflict lingered until 1654 when Dutch forces

capitulated. In the early years of the revolt, the Portuguese held Recife and Mauritsstad under siege. This paper focuses on events that occurred during the siege when WIC forces struggled with the lack of supplies and support from the Netherlands. In this context, Portuguese spies in Recife used ciphers and signal communication to inform the rebel army about the Dutch situation.²

On May 8 1646, Antonio Bugalho (“a mulato from Angola”) delivered a little box with hidden encrypted letters to the High Council of Recife in Dutch Brazil. He was ordered to deliver this box to the Portuguese rebels by João Vieira d’Alagoa,³ one of the last Portuguese who remained in Recife pretending loyalty to the Dutch. Vieira’s decision to spy on the Dutch can be attributed to his debts to the company and his involvement in exploring Brazilwood⁴ as a contractor for the WIC, which provided opportunities for him to establish connections and gather information from Dutch officials.⁵ There are elements to believe he turned against the Dutch at least since 1644 when other rebels visited him and helped to design the cipher he used. Bugalho’s betrayal leads to the imprisonment of João Vieira d’Alagoa. A search of Vieira’s house revealed more ciphertexts and notes in Portuguese, proving that he was responsible for the espionage and secret communication. On May 29 1646, Vieira was found guilty of high treason by the Dutch based

¹ Araújo (2022) p.2-7.

² As Comissoli (2021: 7) indicates, “The Iberian Atlantic witnessed many espionage actions, although mentions of this are non-systematic and most reports were secondhand, narratives in which other people mentioned spies. Reports written by spies are rare. Similarly, identifying their names is difficult, since the need for discretion led them not to sign their messages.”

³ “d’Alagoa” is not a surname for João Vieira. It is probably a reference to where he lived in Pernambuco, which used to differentiate him from others since João Vieira is a common name in Portuguese.

⁴ Brazilwood is a timber tree used to make red dye.

⁵ Hoge Raad, 1644.

on three pieces of evidence: (1) the decipherment of his ciphertexts, (2) the testimonies of Francisco Ribeiro (another Portuguese who still lived among the Dutch) and Antonio Bugalho against him, and (3) his own confessions. For these actions, he was rigorously punished "as a mirror for all traitors" (Kort Discours Rebelye, 1647: on 30th of May). Dutch authorities confiscated all his goods and properties; he was then publicly executed. They displayed his head on a stake, then quartered and hung his body on half gibbets.

The ciphertext from De Pina is a five-page manuscript found in the WIC documents at the Dutch National Archives, in The Hague, the Netherlands. The description made by the archivist⁶ reads: "Statement by Abraham de Pina, in which he gives the key to the number- and secret scripture that members of the Alto Segredo Concilio and the Concilio da Justicia are using in correspondence with him, and letters deciphered with the aid of it. May 1646."

In this paper, we will show that the archivist of the National Archives made a mistake. De Pina was the cryptanalyst, and João Vieira d'Alagoa was the spy that used this ciphertext to communicate with the enemy. Understanding the different roles of these two characters helps us to comprehend more about the use of cryptography in this particular context.

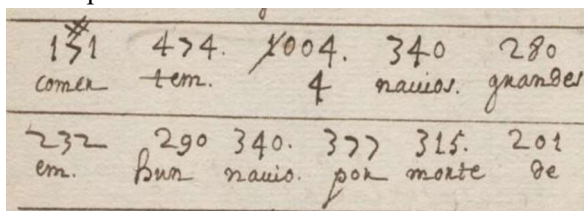


Figure 1: Eleven ciphercode nomenclature elements and their plaintext-words from De Pina (1646).

The paper is organized as follows: In Section 2, a reconstruction of the cipher that De Pina received is presented alongside an analysis of his corresponding notes on the rules governing it. Through this comparative approach, we aim to assess De Pina's aptitude in cryptanalysis. Section 3 shows the key players and the complete trail of

the spy letters within the Dutch administrative process. Section 4 examines the conviction of João Vieira d'Alagoa for sending letters to the enemy and investigates whether he was falsely accused. It analyzes the plausibility of this case by contextualizing it and scrutinizing the espionage report in light of information about Dutch defenses in Brazil. Finally, Section 5 concludes this paper.

2 De Pina's Cryptanalysis in Dutch Brazil

Abraham de Pina, also known as Aarão de Pina or Aarão Sarfati (his Jewish name), was a merchant of Iberian descent who arrived in Dutch Brazil in 1636.⁷ Despite historical evidence suggesting that his correct name is Aarão Sarfati, we will use Abraham de Pina for consistency since it is the name presented in our source.

Not long after the arrest of João Vieira d'Alagoa, Dutch officials asked Abraham de Pina to decipher the ciphertext that Vieira tried to send to the Portuguese rebels. For several days employees of the WIC tried in vain to decipher the four letters, having the two written pages with the Portuguese alphabet at their disposal. On the other hand, De Pina managed to read its contents using his knowledge of cryptanalysis: "by a certain count table or alphabet what each number means" (Hoge Raad, 1646a).

The ciphertexts and other evidence found in different sources (court records and printed accounts) provide clues of what kind of ciphers were used 377 years ago. According to David Kahn, the nomenclature cipher was the predominant cryptographic system during the early modern period. This system "usually had a separate cipher alphabet with homophones and a nomenclature list of names, words, and syllables. This list, originally just of names, gave the system its name: nomenclature" (Kahn, 1996, xvii).

⁶ Based on a wrong interpretation of Appendix 4, lines 1-5.

⁷ In Recife, he acted as a rabbi and sometimes worked for the Dutch as a contractor, making shirts for the soldiers, extracting

brazilwood and as translator. De Pina received four enslaved negros as payment for his deciphering work. With the fall of Dutch Brazil in 1654, he returned to the Netherlands, where he died in 1670. Mello (1989) p.389-390.

2.1 Sheets “Written With the Portuguese Alphabet”

We found evidence that the Portuguese spies used the nomenclature cipher in Brazil. The book of criminal punishment of Vieira (1646) registers that four sheets were uncovered at the detainee's residence within a cabinet. Two of these were written “full with numerical characters” and the other two were “written full with the Portuguese alphabet”. The pages with the Portuguese alphabet must have been the nomenclature used by the WIC employees and De Pina because the Portuguese and Dutch alphabets are identical Latin alphabets. Since the nomenclature is a list of words, the pages found with Portuguese words in alphabetical order (*A*, *Ao*, *As*, *Até*, and so on) matches the description.

2.2 Design of the Cipher

Initially, we analyze the distribution of cipher codes and plaintext. The pattern behind De Pina's output in the report to the High Council and the Councils of Justice in Brazil is presented in Table 1. For the complete design, see Appendix 1. Figure 1 and Table 2 depict the actual distribution of plaintexts over cipher codes.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 to 50	A	A	A	A	A	6th day	A	A	A	A							
51 to 100																	
101 to 150	A	A	A	A	A	6th day	A	A	A	A	A	A	A	A			
151 to 200		B		B			B	B	B	B	B	B	B	B			C
201 to 250	D		D	D	D	D	D	D	D	D	D	D	D	D			
251 to 300		E	E				F	F				F	F	F	F		

Table 1: Part of the pattern of the cipher.

Ciphercode	Plaintext	English
171#	comer	eat
171	comer	eat
201	de	of
474	tem	has/ have
1004	4	4

Table 2: Example of De Pina's actual distribution of plaintexts over codes.

Plaintext letters are randomly coded with the first letter range below 504, wherein words beginning with *A* fall between 1 to 139, *B* from 145 to 164, *C* from 167 to 198, and so on. However, exceptions lie in words starting with *M* as they range from 309-330 and 495-503. The order of the second letter in each word appears to

be random and does not adhere to either an ascending or descending alphabetic sequence. Some plaintext words (14 times) and plaintext numbers (3 times) have two cipher codes, thus, it's homophonic. For example, the plaintext word *Angola* has the codes 8 and 108. The plaintext number 300 has the codes 300 and 1300.

The plaintext numbers are represented in range above 1,000. There are only two exceptions. First, plaintext number 300 falls into the range of the plaintext words (1 to 503). Secondly, the sixth day of the week, *sexta-feira* in Portuguese (English: Friday) has code 6, which is in the first letter range of *A*.

In addition to that, certain cipher codes incorporate the symbol # (in 16 of 472 codes). Also, it is clear that all four cipher letters that De Pina deciphered used the identical nomenclature.

Probably, De Pina did not have the complete nomenclature at his disposal. As we see in Appendix 4, line 119-120 there are four cipher codes that he did not manage to decipher.

2.3 De Pina's Explanation

	Code without #	Code with #	Code 201	Numbers	Plaintext
Ciphercode	352	171#	201	1020	balanca
Rule	minus 1	minus 0	minus 0	minus 1,000	itself
Plaintext-code	351	171	201		
Plaintext	hollandezes	comer	de	20	balanca
Translation English	Dutch	eat	of	20	scale

Table 3: Rules and examples De Pina mentions.

De Pina provided an explanation for the rules he utilized to decipher. In his report, he gives details about the cipher rules (Appendix 4, lines 20-28): “It is warned that the author to write his cipher almost always uses one less than the one he points out, because 474 is 473 and 352 is 351, as I will soon show, and only a few rare times he uses right number and use this sign # and especially the number 201, which he always uses right to it when he wants to say (de). (...) when it says 474, that as I have said, one less is 473, it means TEM and number 352, 1 less means HOLLANDEZES.” To summarize, De Pina explains the following rules applied to read the cipher (see Table 3):

- A code without the symbol # means code number minus 1.

- A code with the symbol # means code number minus 0.
- The code 201 is minus 0 and means “de”.
- The words “not [listed] in the alphabet” are written without a code.

De Pina’s report states that the cipher was created by the author along with two Portuguese individuals who had visited Vieira a year prior (Appendix 4, lines 36-39).

2.4 De Pina's Skill in Cryptanalysis

According to the rules explained by De Pina in the report (see Subsection 2.3) and the distribution of plaintexts over codes (see Subsection 2.2), we conclude that he made some mistakes in the report, in approximately 11% (50 out of 472) of the 472 codes analyzed.⁸ These are the mistakes of De Pina:

- Assigned the wrong plaintexts to codes. For example, code 154 for plaintext *hun* (1 time) should read *bastimento* (1 time) in the range of letter B.
- Assigned the wrong codes to plaintexts with a difference of 1. For example, code 377 had plaintext *podemos* (1 time). We also have code 377 for *por* (4 times) and code 378 for *podemos* (1 time). It should have read 378 *podemos*. We identified this as a code error minus 1.
- Assigned the wrong code to a plaintext. Code 258 had plaintext *fora* (1 time). We also have 258 for *forte* (7 times). Based on frequency analysis, the plaintext *forte* should have been assigned to another unknown code in the range of letter F.
- Used words that fit in another range by Portuguese pronunciation.⁹ Code 349 with plaintext *hollanda* fits in range of letter O (and not of letter H) because in Portuguese H is a silent letter.
- The valuation of a mistake is uncertain in the case of code 1105, which produces plaintext 15 (1 time). It remains unclear whether the error lies with the code or plaintext since a correct reading would yield either 105 or 1015. The discrepancy bears relevance to military strength as it pertains to determining

whether there are either 105 soldiers in a fort or just 15.

Most of his 50 mistakes (see Table 4) were minor mistakes. Only in five cases did he pick the wrong plaintext that yielded another reading: *lhe* (English: *you*) instead of the correct *he* (English: *is*); *com* (English: *with*) instead of *tem* (English: *has/ have*); *hun* (English: *one*) instead of *bastimento* (English: *supply*); *e* (English: *and*) instead of *paraiba* (English: *paraiba*). The last mistake with *e*, he made twice.

It is important to note that De Pina wrote the report using the rule “one less” in the plaintext cases. In the report, he indicates: “when it says 474 one less is 473 it means *tem*”; however, the report uses code 474 for the plaintext *tem*. Another example: “when it says 352 one less is 351 it means *hollandezes*”; meanwhile, in the report, code 352 is used for plaintext *hollandezes*. In other words, the report presents the cipher code from the original letters and its reconstructed plaintext.

Count	Carta3	Carta2 (1)	Carta2 (2)	Total
Improved plaintext	5	3	3	11
Improved code sorting				
consecutive			3	3
minus 1	3	1	6	10
missing	3			3
mistake			3	3
split	2			2
wrong	4	2	4	10
Fits in range by Portuguese pronunciation	3	1	1	5
Uncertain improvement	1	2		3
Total	21	9	20	50

Table 4: Mistakes made in letters (Portuguese: cartas).

De Pina accomplished what the WIC staff couldn’t, even with access to the key. It appears that he had previous expertise in cryptanalysis before his arrival in Dutch Brazil.¹⁰ What specific abilities and knowledge were demonstrated in his report?

De Pina was knowledgeable about nomenclatures, which are ciphers that use a list of words assigned to codes. He also discovered an additional security layer known as “super

⁸ In the Decode Database at *record 1861*, you can find the complete document with all original and reconstructed codes, plaintexts, and analytics.

⁹ Maybe this is not a mistake. In the 17th century there was no rigorous grammar style. *H* has a mute sound in Portuguese, it is not spelled in most words.

¹⁰ Dinissen and Araújo (2022) and Jütte (2015).

encryption”, where he applied specific rules such as subtracting 1 from the cipher code without symbol # and subtracting 0 from codes with symbol #. Furthermore, he used frequency analysis to decipher certain words like “de” by assigning the code 201 minus 0.

Our analysis evidentiates De Pina’s expertise in cryptography, especially during the short span of time he dedicated to decipher the ciphertext. Besides that, this episode sheds light on the pivotal role played by espionage and cryptology in colonial disputes across the Atlantic.

3 Flow of Information

In this section we demonstrate the flow of information within the administrative process of the WIC. Appendix 2 depicts the exact names mentioned and the information concerning ciphertexts in the sources.

3.1 The Events of May 1646 in Dutch Brazil

On May 8 1646, Antonio Bugalho (referred to as a “mulato”¹¹) brought a little box with some letters written with numerical characters from João Vieira d’Alagoa to the High Council in Recife. That same day the Dutch arrested João d’Alagoa and Francisco Ribeiro. These two characters were part of the few Portuguese who still lived among the Dutch after the insurrection of 1645 (Kort Discours Rebellye, 1647).

A week later, on May 15th, Antonio Bugalho requested a third of João Vieira d’Alagoa’s confiscated possessions. Since he betrayed the latter, Bugalho stated that he could not return to his fatherland (Angola) due to fear of Portuguese revenge. Van Walbeeck acknowledged Bugalho as a poor young man who understood the concept of reporting, which granted the right to receive one-third of the offender's possessions (Bugalho, 1646).

When the High Council registered these events on May 16th, they did not mention Bugalho's name. They described the actions of a Portuguese defector from Angola who delivered to them a little box with encrypted (Dutch: *gecijferde*)

parchment and some papers from João Vieira d’Alagoa. After being imprisoned, Vieira was tortured and denied being the owner of the letters. The register of the High Council indicates the finding of similar encrypted papers, but it does not mention the location of the discovery. This source also did not mention De Pina's name and register that “a certain person from the Jewish nation” found the decipherment using “a certain count table or alphabet”. Later, the High Council summoned this person to explain his method. The Jewish cryptanalyst told the High Council that the deciphered letters contained instructions about how the enemy could attack and invade Recife (Hoge Raad, 1646a).

In May 1646, without an exact date, Abraham de Pina wrote a report with the deciphered four ciphertexts written to the enemy between April and the beginning of May. This report does not mention the name of the sender. De Pina indicates it throughout the text as “the author”. However, De Pina indicates that the invention of the nomenclature and additional steps were made by the author in his house, together with Brás Afonso and Manoel João, both described as “from the other side”, i.e. Portuguese rebels. The encrypted letters contained valuable military intelligence, including details on the number of ships and their weapons, fort locations and troop maintenance. The content also provided information on tactics for attacking and communicating specific details through signals regarding food supply, health status, ship transit schedules to destinations like Holland, Guinea and Angola. For a complete transcription and translation of De Pina (1646), we refer to Appendix 4.

On May 29 1646, João Vieira d’Alagoa was convicted for high treason because he corresponded with the enemy. Dutch officials found at the house of Vieira more encrypted letters in the same handwriting. Francisco Ribeiro testified that he saw Vieira cut pieces from a book on which he wrote the ciphertext. These cut pieces fit the indicated book found in Vieira's house. Faced with the evidence, Vieira confessed that the

¹¹ “Mulato” is a derogatory word in Portuguese and Dutch for describing people of mixed race. Mello (1985) p.222.

letters were indeed his property. See Appendix 3 for the complete transcription and translation of Vieira (1646).

In their daily minutes, the High Council wrote on May 28 1646 (sic) about João Vieira d'Alagoa conviction for sending letters in numerical characters to the enemy. The council showed certainty that he wrote these letters (Hoge Raad, 1646a).

The High Council wrote to the Gentlemen XIX on June 4 1646¹², a letter in favour of Antonio Bugalho, who came from Angola with the yacht *Heemstee*. They paid Bugalho 75 guilders for handing over the box with the letters to them and not to the enemy. On his request, Bugalho went to the fatherland, i.e. the Netherlands. The High Council asked the Gentlemen XIX to give Bugalho an "important and pleasant work" since his favour was meritorious to their state (Hoge Raad, 1646c).

At last, the High Council wrote to the Gentlemen XIX in their periodic report on June 21 1646. They indicated that under letter F was a copy of the deciphered (sic¹³) advice (Dutch: *ontciferde advijsen*), informing that João Vieira d'Alagoa intended to send secret messages to the enemy and for that he received a conviction on May 29th (Hoge Raad, 1646b).

3.2 List of Documents

In the Letterbook (1646) dated approximately June 21 1646, contains a list of relevant documents, ordered alphabetically, for this case:

- Letter F. Copy of an encrypted letter (Dutch: *geciferde brief*) written by João Vieira d'Alagoa.
- Letter L. Periodic report from the High Council.
- Letter V. & deciphered letter (Dutch: *ontcijfferde brief*).
- Letter W. Extract from the criminal verdict against (Dutch: *tegens*) Joan Fer(nan)do Viera.
- Letter Y. Antonio Bugalho mulato.

- Letter Z. Extract from the criminal verdict about (Dutch: *over*) Joan Fer(nan)do Viera.

In Subsection 3.4, we'll explain more about the reconstruction of this letterbook.

3.3 Flow of Information Between Brazil and The Netherlands

The package with letters gathered around June 21 1646, arrived in the Netherlands approximately six weeks later, probably in the first or second week of August. We could not establish if the Gentlemen XIX used this information or if it changed their policy in Dutch Brazil since there are no preserved (secret) minutes of this period.

However, we identify that on October 23 1646, the Gentlemen XIX (1646) sent orders to the High Council Brazil, replying to their report of June 21st. There is no mentioning of João Vieira d'Alagoa's conviction or his ciphertexts. Not even a word about Antonio Bugalho and Francisco Ribeiro. There is a complete silence about the information received about the Portuguese. This information most likely had no direct impact on their strategy in Dutch Brazil. At that time, they had other concerns, like sending troops and supplies to break the siege of Recife and establishing a blockade of Salvador (the capital of Portuguese Brazil) to diverge the Portuguese attention away from Pernambuco.

The siege almost led to the capitulation of the Dutch. As Araújo (2022: 11-12) explains, the capitulation "was only prevented by the arrival in August 1646 of a WIC fleet bringing supplies and military reinforcements. (...) After alleviating the hardships caused by the siege of Recife, the Dutch authorities decided to go on the offensive", launching a naval blockade on the city of Salvador.

3.4 Jan Veeira and João Vieira d'Alagoa are One and the Same

It cannot be directly confirmed that Jan Veeira and João Vieira d'Alagoa, who was convicted on May

¹² The date reads: 1646-1-4. This information must be an error of the clerk. The arrest of Vieira was on 1646-5-8 and this letter went with the package around 1646-6-21 to the Netherlands. Month must read: June.

¹³ In Hoge Raad (1646b) it reads "deciphered". In Letterbook (1646) it reads "encrypted". In Dutch *ontciferde* versus *geciferde*. They are opposites!

29 1646, are the same person. However, by analyzing fragmented evidence from various sources such as the Kort Discours Rebellye (1647), Bugalho (1646), Hoge Raad (1646a, 1646b, 1646c) and Fonseca (1646), we can conclude that they refer to one individual. It should be noted that João Vieira is a common name among the Portuguese which could lead to confusion. Therefore it is important not to confuse João Vieira d’Alagoa with rebel leader João Fernandes Vieira¹⁴ solely based on their shared names.¹⁵ Additional details regarding this case can be found in Appendix 2 where each source’s contribution is explained more extensively.

Letter	Original	Reconstructed	Source
F	Copy ciphertext João Viera d’Lagoa	Original ciphertext in copy	not in archive
V	Deciphered ciphertext from author	Author is João Viera d’Alagoa. De Pina is cryptanalyst	De Pina, 1646
W	Criminal verdict Joan Fer(nan)do Viera. In text: Jan Veeira	João Viera d’Alagoa is verdicted	Vieira, 1646
Y	Bougalhe is rewarded for bringing letters João Viera d’Alagoa to High Council	Bugalho	Hoge Raad, 1646c
Z	Criminal verdict Joan Fer(nan)do Viera	Joan Fer(nan)do Viera is verdicted	not in archive

Table 5: Information Letterbook (1646) reconstructed.

Isaac Aboab da Fonseca, a prominent leader of the Jewish community of Recife, witnessed the events of the execution of João Vieira d’Alagoa, mentioning his conviction in the poem "*Zekher asiti leniflaot El*" (I have set a memorial to God's miracles). Fonseca (1646) describes the events that followed the insurrection of 1645. As he wrote, the "hardships weakened these people [of Recife], for the conspiracy threatened from within and without. Traitor bastards and black Mamelukes revealed secrets to the enemy to capture Recife, but *the Council decreed the death penalty for one of them: João Vieira de Alagoas.*"

A comparison between the information of letters W and Z in the Letterbook (1646) reveals that Joan Fer(nan)do Viera was sentenced twice, possibly due to a clerk’s error, registering the same person under different surnames. The correct surname for João Vieira d’Alagoa should

have been used instead of Joan Fer(nan)do Vieira in letter W. However, it is impossible to determine conclusively as letter Z could not be located at the National Archives (The Hague). See Table 5 for further details.

Unfortunately, the letter F, described as a copy of the ciphertext used by João Vieira d’Alagoa, could not be located within the National Archives.

We believe that letters W and Z are both about João Vieira d’Alagoa, because the High Council wrote on June 21 1646, mentioning that they would send records of the confession and conviction to the Gentlemen XIX. It suggests that there were two separate documents (Hoge Raad, 1646b).

4 The Bigger Picture

In this section, we tackle the inquiries regarding the plausibility of this case by providing context and scrutinizing the espionage report in light of existing information pertaining to the state of Dutch defenses in Brazil.

4.1 Was João Vieira d’Alagoa Framed?

Upon reading Vieira’s (1646) case, it appears that the Councils of Justice had legitimate grounds to prosecute João Vieira d’Alagoa in May 1646, as they presented substantial evidence against him. Nonetheless, one cannot completely dismiss the possibility that he was falsely accused or framed. The Dutch pamphlet *Brasyls Schuyt-Praetjen* (1649) argues that justice in Dutch Brazil was blind and incapable of perception or action. The passage discusses a Dutch practice of falsely incriminating Portuguese residents. A black slave (Dutch: *negeros*) was coerced into delivering a fabricated letter, supposedly written by his master's counterfeited handwriting (Dutch: *konterfeyte sijn handt*), which would harm to the Dutch government. Under “the promise to set him free or some other encouragement”, the slave, after being seized by the military, would testify

¹⁴ João Fernandes Vieira was a sugar mill owner who rebelled against the Dutch, leading other rebels in the insurrection of 1645.

¹⁵ Wiesebron (2005) incorrectly indicates that Jan Viera, João Vieira, João Vieeira, and Joan Fernandes Vieira are all referring to João Fernandes Vieira d’Alagoa.

against his master allowing the Dutch officials to seize the goods of the accused traitor.

It is unlikely that the Dutch framed João Vieira d’Alagoa. The complexity of their ciphertext (see letter F in Subsection 3.2) and the report on deciphering suggest authenticity, supported by mistakes in De Pina’s report due to an incomplete key. Although it would have required bribery and false confessions for the Dutch to frame him, this hypothesis lacks sufficient evidence.

4.2 Found Ciphertexts are Rare

Dinnissen and Araújo (2022) researched the use of ciphertexts during the 17th-century war in Brazil by Portuguese forces. While they discovered some evidence of this practice being employed, it was noted that such occurrences were rare. On the other hand, until now, there is no evidence of use of cryptography by authorities in Dutch Brazil.

The New West India Company (1675-1792) used, more than 120 years later, ciphers. In 1710, in a reply to a letter from February 21 of the same year, the Gentlemen X¹⁶ gave orders to the

Council in Guyana, instructing them that encrypted letters (Dutch: *cijfer letteren*) should use the old form instead of the new, advising to be used with great care to avoid mistakes. Otherwise, it could not be properly decrypted (Dutch: *ontcijffert werden*).

4.3 Number of Soldiers in Recife According to Spy Report

In this section, we made a visual aid to understand the information presented in the spy report of João Vieira d’Alagoa (De Pina, 1646). We utilized the map of Recife and Mauritsstad to locate fortifications and their respective garrisons. The ciphertext indicates soldiers’ race, distinguishing between Europeans, blacks, and indigenous peoples, as well as their assigned fortification (Appendix 4, line 66-82). See Figure 2 and Table 6.

On the map in Figure 2, we identified numbers 1 to 9 as fortifications that the spy mentions with the number of soldiers. The numbers 10 to 13 are fortifications mentioned by the spy without the number of soldiers. Numbers 14 to 17 are

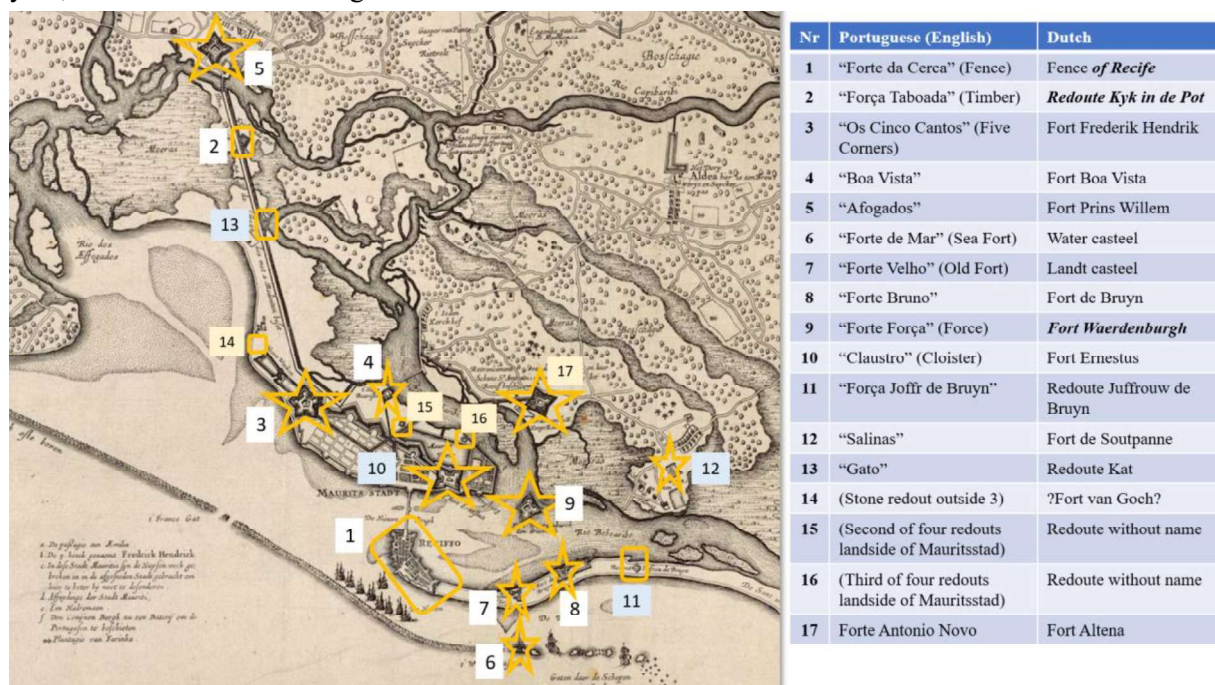


Figure 2: Dutch fortifications (symbol for forts * and symbol for redouts ■) with their Dutch and Portuguese names in Recife, Brazil. Map is from Cornelis Goliath, ‘Olinda, Maurits-Stadt ende ’t Recife’ (1648), engraving published by Claes Jansz. Visscher, Scheepvaartmuseum, inv.nr A.3143 (03).

¹⁶ The company superiors of the Old WIC are the Gentlemen XIX (read: nineteen). The superiors of the New WIC are the Gentlemen X (read: ten).

fortifications not mentioned by the spy in the ciphertexts.¹⁷ These fortifications have different names in Dutch and Portuguese, and sometimes they have more than one name. We identified fortifications through their descriptions, like “forte da Cerca” (1) related to the “fence of Recife”. In the case of “força Taboada” (2), we identify it as the redoute “Kyk in de Pot” because its description was a wooden battery surrounded by palisades (*taboada* means *wooden plank* in Portuguese) and its role for defending the fortified dike. We identify “forte Força” (9) as “fort Waerdenburg” since it was a strong fortification, in a key position for the defence of Recife.

Number Fortification	Number of WIC Soldiers			Total
	European	Blacks	Indigenous	
1	30			30
2	"little force"			?
3	80	20	60	160
4	15			15
5	100	20	20	140
6	10			10
7	4			4
8	100	10	10	120
9	15			15
Soldiers Recife in fortifications	354	50	90	494
Soldiers Recife in companies	700	?	?	700
Subtotal Recife	1.054			1.054
Soldiers Itamaracá	70	?	"many"	70+
Soldiers Paraíba	240	?	"many"	240+
Subtotal Other	310			310+
Total according to Spy in 1646	1.364	50	90+	1504+
Total according to Miranda in 1646	2.017	59	200	2.276
Number soldiers not account for by Spy	653	9	110-	772-

Table 6: Number of soldiers in Recife according to the spy his report around April 1646.

The “stone redoute outside Fort Frederik Hendrik” (14) is described in other sources of 1646, but its date of construction is unknown. The date of construction of “fort Altena” (17) is uncertain; it was abandoned by the Portuguese and occupied by the Dutch in April 1648; if it existed in April 1646, it was a Portuguese fortification.

It is unclear why the spy doesn’t mention the “second and third of four redoutes on the landside

of Mauritsstad” (15 and 16). They were built in 1631 and remain visible on later maps.

One possible explanation for the lack of information could be related to the changes in the landscape of Recife, mostly because “After 1645 the city was reorganized so that it could be better defended. Houses were demolished and new fortifications were built, which unfortunately have not been depicted in maps.” (Hulsman, 2015: 34). Another possible explanation is that the spy did not have access to the number of soldiers in these redoutes.

By examining additional contemporary sources, we can gauge the reliability of the data provided. The estimated population of Dutch Brazil during this time is 12,703 individuals encompassing all genders and ethnicities including Europeans, blacks, and indigenous peoples.¹⁸ All European soldiers of the WIC, not specified by captaincy, reached a total of 2,017; the lowest number since the beginning of Dutch Brazil in 1630.¹⁹ These numbers are followed by 200 indigenous stationed between Recife and Itamaracá and 59 black soldiers of the company.

The report by the spy notes 354 WIC soldiers, 50 blacks, and 90 indigenous individuals present in the fortifications (refer to Table 6). Moreover, he also includes a count of soldiers involved in operations outside Recife who are not included as garrison troops. The spy mentions in line 163-165: “The six companies in Recife have 360 soldiers. The three companies of Santo Antônio have 120. The Governor's company, Huyter's Company, Claes' company, and Kil's company all have 160. The company has 60 soldiers.” Putting together these numbers, we have a total of 700 European soldiers outside the fortifications in Recife. In total there are 1,054 European soldiers in the fortifications (354) and companies (700). That is 52% of the number (2,017) mentioned by Miranda above. If we consider that Recife was the capital of Dutch Brazil this number seems plausible and accurate.

¹⁷ Dating and details based on Hulsman (2015: 27-37) and Miranda (2011: 65).

¹⁸ In Letterbook (1646b) from March 1646 this list (Hoge Raad, 1646d), without a date, is mentioned under reference 'qq'.

¹⁹ Miranda (2011: 38) presents the numbers of WIC soldiers in Brazil between 1630-1654 by year.

These elements corroborate that the spy managed to gather sensitive information about the weakest spots of the Dutch. Besides that, this data serves as a picture of the time endured by the Dutch during the siege.

5 Conclusions

Our investigation revealed that Abraham de Pina was the skilled cryptanalyst who deciphered the four letters written by João Vieira d'Alagoa. In his report to the High Council, he disclosed both his deciphering of the original letters' cipher codes and his efforts towards reconstructing their plaintext. Despite having access to an incomplete nomenclature, De Pina accomplished a remarkable feat in deciphering all of the letters within only several days. Nonetheless, our analysis shows that there were four unresolved ciphercodes within "ciphertext 1".

The collaboration between spy João Vieira d'Alagoa and Portuguese rebels Brás Afonso and Manoel João resulted in the creation of a complex nomenclature cipher that utilized super encryption for added secrecy. This case serves as direct evidence of the use of nomenclatures by the Portuguese in Brazil during the 17th century.

In conclusion, despite De Pina's report detailing a concerning situation of espionage and information gathering for the rebels, the Gentlemen XIX chose not to take any action in response. This decision was reflected in their subsequent orders which indicated that this particular case did not alter their strategy for Brazil.

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APPENDIX 1. Distribution of plaintext-words (first letter) and plaintext-numbers over cipher-codes

[illegible]

APPENDIX 2. Summary sources. Names mentioned and information concerning ciphertexts

Letters F and Z in Letterbook (1646) have been crossed out because they are mentioned but were not found in the National Archives, The Hague.

Source	Date	Letter	Names mentioned				
			João Vieira d'Alagoa	Mulatto/ Bugalho	Francisco Ribeiro	João Fer(nan)do Viera	Cryptanalist
Kort Discours Rebelye (1647)	1646-5-8	not	Jan Viera d'Allegro Portuguese from Reciff	Molatte; Molaet	Francisco Rebero Portuguese from Reciff	not	not
	1646-5-14		the imprisoned Portuguese	not	not	not	not
	1646-5-25		Jan Viera d'Allego	not	Francisco Rebero Portuguese	not	not
	1646-5-30		Jan Viera d'Allego Portuguese	not	not	not	not
Bugalho, 1646	1646-5-15	not	Joan Viera dalagoa	Antonio Bugalho	not	not	not
Hoge Raad, 1646a	1646-5-16	A	Johan Vieira d'Alagoa; Jan Vieira	Portuguese who came from Angola	not	not	Person from the Jewish nation
	1646-5-19		Johan Vieira d'Alagoa	not	not	not	"Persons" who did deciphering
	1646-5-28		João Vieira d'Allagão	not	not	not	not
De Pina, 1646	1646-5-??	V	not	not	not	not	Abraham de Pina is a Jew and he doesn't mention a name. He writes: author.
Vieira, 1646	1646-5-29	W	Jan Veeira born in Gumarais, Portugal lives in Reciffe	Portuguese who came from Angola named Antonio Bugalo; Antoni Bulgao	Francisco Rubero	not	not
Letterbook, 1646	1646-6-21 (around)	not	Letter A. Daily minutes (High Council); Letter F. João-Viera d'Alagoa; Letter L. General report (High Council)	Letter Y. Antonio Bougalho mulatto	not	Letter W. Joan Fer(nan)do Viera; Letter Z. João- Fer(nan)d(e)-Viera	Letter V. Deciphered letter
Hoge Raad, 1646b	1646-6-21	L	João Vieira d'Alagoa from Reciff	not	not	not	not
Hoge Raad, 1646c	1646-1-4	Y	João Vieira d'Alagoa	Antonio Bougalhe from Angola with yacht Heemstee	not	not	not
Gentlemen XIX, 1646	1646-10-23	not	not	not	not	not	not

Source	Date	Letter	Information concerning ciphertexts			
			What	How	Cryptanalist	Content letters
Kort Discours Rebelye (1647)	1646-5-8	not	Betrayed us and communicated with enemy	Little box with some letters written with number letters	not	Without doubt great secrets are hidden in these Letters
	1646-5-14		not	not	not	not
	1646-5-25		not	not	not	not
	1646-5-30		Convicted. Beheaded and quartered as a mirror for all traitors	not	not	not
Bugalho, 1646	1646-5-15	not	not	not	not	not
Hoge Raad, 1646a	1646-5-16	A	not	Little box with a ciphered parchment and some papers. Simular ciphered papers have been found	Person from Jewish nation found decipherment by a certain count table or alphabet what each number means	Story about our area and instructions about how the enemy could get Reciff
	1646-5-19		Decrypted letters	not	Persons who did the deciphering	not
	1646-5-28		Convicted for sending letters to enemy	Letters in numerical letters	not	
De Pina, 1646	1646-5-??	V	Cryptanalysis of ciphertexts	not	De Pina	Told enemy: (a) number of ships and its armaments; (b) location of fortresses, troops there and its maintenance; (c) how to attack where; (d) how to communicate about amount of food, drink, dead, and sick; ships and the number of people on board coming and leaving
Vieira, 1646	1646-5-29	W	Corresponded with enemy. Convicted for high treason	In a tobacco box without lid several letters, both on paper and parchment, written in numerical letters. In detainee's house in cabinet were found in the same hand: four leaves two of which were written full with number letters and the other two written with the portuguese alphabet	not	Told enemy: (a) number of ships and its armaments; (b) location of fortresses, troops there and its maintenance; (c) our alleged weaknesses; (d) plans and main advices
Letterbook, 1646	1646-6-21 (around)	not	Letter W. Criminal punishment Joan Fer(nan)do Viera; Letter Z. Criminal punishment Joan- Fer(nan)d(e)-Viera	Letter A. Daily minutes (High Council); Letter Y. Antonio Bougalho mulatto	Letter F. Copy of a ciphered letter written by João Viera d'Alagoa; Letter V. Deciphered letter	Letter L. General report (High Council)
Hoge Raad, 1646b	1646-6-21	L	Advice intended to send to enemy	Under letter F. Copy of the deciphered advice	not	not
Hoge Raad, 1646c	1646-1-4	Y	Letters written in cipher number intended to hand over to enemy	Letter was translated		Clear revelation to enemy of position and situation of our state. Disclose information with signals
Gentlemen XIX, 1646	1646-10-23	not	not	not	not	not

APPENDIX 3. Vieira (1646) transcription and translation

TRANSCRIPTION

(62_43 scan 1)

(in margin: a round stamp in purple with text “RIKSARCHIEF ’S GRAVENHAGE”)²⁰ / 29 mei 1646 (later annotation in lead pencil) / 43 (later annotation in lead pencil)

W²¹

Extract uijt het Criminele Sententieboek / vande raaden van Justitie

Alsoo Jan Veeira geboortigh van gumarais in poortugael / omtrent out 40 Jaren, tegenwoordigh gedetineerde, niet / tegenstaende de generale rebellie vande portugeesen / vergunt was in ruste & vrede alhier op 't Reciff te / verblijven, & sijne woning & goederen te behouden, echter / misbruijckende de voors(eijde) gunste ende faveur, & / vergetende sijnen Schuldigen plight & eet van getrouwigh(eijt) / bestaen heeft gedurende, dese troebelen met onse vijanden / correspondentie te houden, aen deselve bedeckter wijze, te / Schrijven & haer alsoo alle de gelegentheijt van onsen / staet bekent te maacken sulcx hij getraght heeft te doen, / gevende aen seecker portugees gekomen van Angola / genaemt antonio Bulgalo (naer dat hij hem alrede / tot het overloopen getracht hadde te induceeren) seecker / Tabacx doosken sonder Scheedel bedeckt, met een houtten / bodemtgen, & eerst met hars o(ver)loopen & daer op met / metridaet²² bedeckt daer inne & waernevens hij veeira / hadde gedaen verscheijde brieven, soo op papier als / francijn²³ met cijffer letters geschreeven, bij de welcke / hij aenden gouverneur vanden Vijant Het getal van / onse Scheepen, de Monture van dien, de gelegentheijt / van onse fortten, de besettinge van deselfde als / onderhout, mitgaders alle nootlijckheeden²⁴ (ver)meijnde / bekent te maacken, & met diverse teijckenen uijt eenige / Hooghten onse desseijnen & voornemen te adviseeren / blijkende tselve evident & klaerlijck bij de voornoemde / geintercipieerde brieven, & nogh eerst bij seecker stucxken, / francijn, hebbende omtrent de lenckte van een vinger / bij de Heeren Commissarisen tot het inventariseeren van den / gedetineerdens goederen gecommiteert Sijnde in / blanco geschreeven #w : 's : '90²⁵ Met deselve Hant & letteren / als seecker pampierken in't voors(chreven) doosken bevonden / Twelck met deselve woorden beschreeven was, & eenigh harpui²⁶ / sijnde als tgeen, waermeede de brieven int v(oorseijde) doosken / voor te werden waren gepreserveert²⁷, tsamen in des / gedetineerdens huijse gevonden, Nogh bij seecker pampierken / aldaer bij de Vernoemde, Heeren Commissarisen In seecker / Schiftoor²⁸ off kasken Met laetgens bevonden hebbende / aen de eene sijde even & deselve maniere van doorgeschrap / & met een & deselve Hant gemaecte sijffer letters /

Verto²⁹

(62_43 scan 2)

Als int gecijfferde & aen de andere de eijgen hant / vant portugees AlphaBet als inde andere brief / als int v(oorschreven) doosken bevonden sijn, Mitsgaders uijt seecker / kleijn & smal gecijffert francijntgen doorgesteecken / & geknoopt aen het andere stuck gecijffert parkement / twelck Francisco Rubero gedetineerde inden Rade verclaert / heeft gesien te hebben dat Jan Veeira hetselve van seecker / kleijn boeckgen met een mes

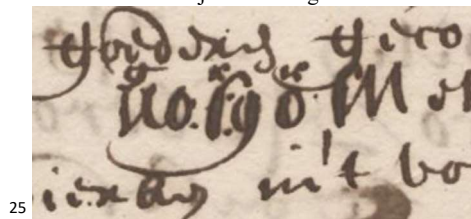
²⁰ Stamp of the State Archive in The Hague, the Netherlands. Until 1913 this was the name of the current National Archive (Dutch: Nationaal Archief) in the Netherlands.

²¹ Letter W refers to list of documents (numbered from A-Z) destined to the WIC, chamber Zeeland (Letterbook, 1646). Transcription: extract wt de Criminele sententie tegens joan fer(nan)do viera. Translation: extract from the criminal verdict against Joan Fer(nan)do Viera.

²² English: mithridate or mithridaticum. Generally all-purpose antidote.

²³ Dutch: fransijn. Parchment imported from France. Processed animal skin, used for writing.

²⁴ Dutch: noodzakelijkheden. English: necessities.



²⁵ Dutch: hars. English: resin.

²⁷ The meaning of this sentence is not entirely clear. It is probably the fabric or cloth under which the letters were hidden.

²⁸ Unknown piece of furniture.

²⁹ Latin: verto. English: I turn. Read: turn page over.

affgesneeden Heeft & / nogh specialijck uijt seecker boecxken, bij de voors(chreven) Heeren / Commissarisen op den 28^{en} deeser ten selven Huijse in seecker / kisen gevonden sijnde, geintituleert³⁰ Regras da Compahia / de Jesu³¹ van de welcke de gedetineerde verclaerde nogh / een goede partije ten sijnen huijse te hebben aen welcx boecxken / nogh een kleijn stuckxken francijn aen den rugge was gebleven / waer aen de twee eersten gementioneerde stucxkens / parcement gevoeght sijnde de lenghte & breedte in bant / & naeijsel³², & alle andere omstandigheeden aen gebleecken / heeft het selfde boecxken te sijn, Waer van hij / gedetineerde de selfde ten deele heeft affgescheurt / ende affgesneeden, & nogh uijt seecker boecxken geintituleert / Primaira examen gene(ral) quese ad e propone a / todo los que pediere ser admittidas en la de Comp(anhia) / de Jesu³³ gebonden in octavo met swart leer o(ver)trocken, met / de Hant geschreeven sijnde met purper couleur op de sude / geverft (dogh verblickt) & meede ten selven Huijse int / voornoemde Casken gevonden uijt het welcke vier bladeren / waren gescheurt sijnde twee vol sijffer letters / & de andere twee met 't portugees Alphabet volschreven / & int Tabacx doosken bij Jan Veeira aen antoni / bulgao gegeven gevonden, welck boeck neffens / de twee voorseijde brieven aende gedetineerde vertoont / sijnde bekende tselve sijn eigen goet te sijn, & deselve / papieren uijt 't vernoemde boeck gescheurt te hebben / Wt alle welcke ongetwijffelde & onwederlegge- / lijcke inditien mitsgaders uijt de Verclaringhe van / Francisco Rubero & des gedetineerden gequali- / ficeerden Confessie inden rade gedaen klaerlijck / gebleecken des gedetineerdens Verradelijcke & / trouloose Minees³⁴, met dewelcke hij voorgedacht / heeft deesen onsen Staet aende Rebelleuse & / Meijnnedige portugeesen te ontdekken & bekend te / maaken, & ons alle met Vrouwen & kinderen / te stellen in een generael Bloetbadt, sijnde tselve van / seer Schadelijcke, ende pernitieuse³⁵ gevolge, die in een / lant van pollitije, & daer men gewone Justitie /

(62_43 scan 3)

te administreren, niet mogen geleeden off / getollereert werden, maer andere ten exempel op het / rigoreuste gestraft, Soo ist dat den rade / van Justitie naer gehoorden eijsch vanden ad(vocaa)t fiscael / de voornoemde klare & onwederleggelijcke inditien / mitsgaders, twelck meer ter materie dienende was / & haer Ed(ele) hadden konnen off mogen moveeren o(ver)wogen / hebbende, doende Reght uijtten naem & van weeghen / de Ho: Mog: Heeren Staaten Generael der / vereenighde Nederlanden Sijn Voocht den Heere / prince van Oragnen, & de generale geotroijeerde / Westind(ische) Comp(agnie) den voornoemden gedetineerde / verklaert te hebben gelijk sij hem v(er)klaaren bij deesen / Begaen te hebben Crimen Lese Maiestatis³⁶ / & condemneert hem gebracht te werden ter plaetse / daer men gewoon is criminele Justitie te doen / & aldaer met den Swaerde ter doot geexecuteert / het Hooft gestelt te werden op een staeck het doode / Lighaem gevierendeelt, & ijder vierendeel gehangen / te worden aen halve galgen aende naeste plaetsen / vanden vijant & geconfisqueert alle sijne goederen. / Aldus gedaen & gearresteert inden rade desen 29^{en} / Maj 1646. & gepronuntieert den 30^{en} daer aen / volgenden was onderteeckent B: van groenesteijn

TRANSLATION FROM DUTCH INTO ENGLISH

(62_43 scan 1)

(stamp) / 29 may 1646 (in lead pencil) / 43 (in lead pencil)

W

Extract from the book of Criminal Punishment / of the Councils of Justice

Although Jan Veeira, born from Gumarães in Portugal, / around 40 years old, nowadays prisoner, not / withstanding the general rebellion of the Portuguese, / was allowed to dwell here on the Recife in rest and peace, / to keep his house and property, he however / abusing the aforementioned benefit and favor, and / forgetting his due duty and oath of loyalty, / had the audacity, during this revolt to correspond with our / enemies, to write to them in a disguised / manner and thus to make known to them / the whole condition of our state, trying to do this: / He gave

³⁰ Dutch: getiteld. English: titled.

³¹ Book 'Regras Da Companhia De Jesu'. Written by the Jesuits.

<https://books.google.nl/books?id=pqoQDIJTSUkC&hl=nl&pg=PA1#v=onepage&q&f=false>

³² Dutch: de boekband en het naaisel (genaaide gedeelte). English: binding and sewing of the book.

³³ A bound manuscript from the Jesuits. Translation of title: 'First exam which is proposed to all who asked to be admitted by the Company of Jesus'.

³⁴ Dutch: manieren. English: manners. Not in dictionary, but also found in a pamphlet 'De Quade Minees en Practiken Van seeckeren George Carew, Ondeckt en de open geleght, Tot Onderrichtingh en Waerschouw aen Nederlandt' (Middelburg 1675).

³⁵ Dutch: gevaarlijke of verderfelijke gevolgen. English: dangerous.

³⁶ High treason. Latin: Crimen laesae maiestatis. French: Lèse-majesté. Meaning "offence to the majesty", is an offence against the dignity of a state (or its reigning head).

to a certain Portuguese who came from Angola, / named Antonio Bugalo (after trying in advance / to persuade him into defecting) certain / little tobacco box without lid, with a little wooden / bottom, and first doused with resin and thereafter with / mithridate covered, in which and whereby he Veeira / has put several letters, both on paper and / parchment written in numerical letters, in which / he told the governor of the enemy the number of / our ships, their armaments, the location / of our fortresses, with its troops there for its / maintenance, furthermore meaning to disclose all / necessities, and to communicate with several symbols to some / extent our plans and intention. / This turns out to be evident and clear with the aforementioned / intercepted letters, & still first with a certain little piece of / parchment, about the length of a finger, (found) / by the Gentlemen Commissioners with commission to make an inventory of the / goods of the detainee, which was / written in blank 'w : 's : '90 in the same hand and letters / as certain little paper in the aforementioned little box, / which was inscribed with the same words, and some resin, / like that, with which the letters in the aforementioned little box / were to be preserved, found together / in the detainee's house. The same with a certain piece of paper / there by the aforementioned Gentlemen Commissioners located in a certain / 'schiftoor' or little chest with drawers, which had / at the one side equally and the same way of strikethrough / & with one and the same hand made numerical letters /

Turn page

(62_43 scan 2)

as in the ciphertext and on the other side his own handwriting / with the Portuguese alphabet as in the other letter / as found in the aforementioned little box, also on certain / small and narrow little parchment with some ciphertext pierced / and knotted to the other piece of parchment with ciphertext, / of which Francisco Rubero, detainee, had declared in the council / that he had seen Jan Veeira cutting it of from a certain / small book with a knife and / still especially from certain booklet, by the aforementioned Gentlemen Commissioners on the 28th of this month in the same house / found in some small box, with the title "Regras da Compahia / de Jesu". Of this (copy) the detainee declares to still / have a good stock at his home. This booklet / still had a small piece of parchment on its back / to which the first two mentioned pieces of / parchment added sum up the length and width in of the / binding and sewing of the book, and with all circumstances showing / to be the same book, from which he, / detainee, declared having torn off / and cut off parts, and also from a certain book titled / "Primaira examen general quese ad e propone a / todo los que pediere ser admittidas en la de Companhia / de Jesu", bound in octavo covered with black leather, / handwritten, painted with a purple color on the suede / (but faded) and also found in the same house in the / aforementioned little chest from which four leaves / were torn, two of which were fully written with numerical letters / and the other two fully written with the Portuguese alphabet / and found in the tobacco box that Jan Veeira / gave to Antoni Bulgao. Which book besides / the two aforementioned letters shown unto the detainee, / he confessed to be his own property, and to have / torn those papers from the aforementioned book. / From all those unquestionable and irrefutable / clues together from the statement of / Francisco Rubero and the detainee's qualified / confession in the council had turned out obviously / the detainee's treacherous and / faithless undermining, by which he had in / mind to disclose and reveal our state to the rebellious and / perjured Portuguese and to / expose us all, including women and children, / to a general massacre. This is the / very harmful and dangerous consequence, that in a / country of police, and where common justice is /

(62_43 scan 3)

administered, should not be suffered or / tolerated, but to others as an example in the most / rigorous way should be punished. Therefore it is that the Council / of Justice after hearing the demand of the Attorney Fiscal / the aforementioned clear and irrefutable clues / together with, which was serving to substantiate more / and could or should having the Honorable Gentlemen³⁷ moved or / considered, to do justice on behalf of and because of / the High and Mighty Lords of the States General of / United Netherlands, his Guardian the Lord / prince of Orange, and the General Chartered / West Indian Company, have declared to the aforementioned detainee / as they declare him hereby to have / committed High Treason / and condemn him to be taken to the place / where it is customary to punish criminals / and to be executed there with the sword, / the head to be put on a stake, the dead / body quartered, and each quarter must be hung / on half gibbets near the places / of the enemy and all his goods to be confiscated. / Thus done and confirmed in the council this 29th / May 1646, and ruled on 30th following. / Was signed B. van Groenesteijn.

³⁷ Literally: her Honorable (i.e. from the Councils of Justice).

APPENDIX 4. De Pina (1646) translation and transcription

Translation into English and below it the *transcription*. The lines with the ciphercode and plaintext are treated separately code by code: *code (transcription)*, *plaintext (transcription)*, plaintext normalised (if any), translation into English, code reconstructed (if any), plaintext reconstructed (if any), translation reconstructed (if any). In footnotes the reconstructed code or plaintext will be justified.

- [62-44 scan 1]
- L1 V³⁸ / mei 1646³⁹ / 44
V / may 1646 / 44
- L2 Declaration of these alphabetical letters, and ciphers, which before
Declaração destas cartas alfabetas e cifras que diante dos
- L3 the men of the high and secret Council and the men of the Council
Homens do Alto e Secreto Conselho e dos homens do Conselho
- L4 of Justice by me Abraham de Pina, were declared
da Justiça por mim Abraham de Pina, foram declaradas
- L5 in May 1646.
em Maio de 1646
- L6 Firstly the alphabet of words so various are like an index of the
Primeiramente o Alfabeto de palavras tão várias são como um índice das
- L7 words that whoever uses them in their letters whereby each one of them is
palavras que quem usar nas suas Cartas por onde cada uma dela é
- L8 required to have a number which is as follows: the first word is A
necessário ter um número o qual é o seguinte: a primeira palavra é "A",
- L9 and must have number 1. The second one is number 2⁴⁰, AS three. ATÉ 4, AVENDO Five,
há de ter nº1. A segunda de nº 2, "as" três, "até" 4. "Havendo" cinco
- L10 the SEXTA FEIRA 6, until the word 10 ASIMA that will have the number 10.
a "sexta-feira" 6, até a palavra 10 "acima" que terá o nº10.
- L11 Apart from this it is necessary that the same words
Fora isto é necessário que as mesmas palavras
- L12 from the first A start numbering 101 and go on
desde "A" primeira "A" se começa a numerar 101 e vá
- L13 until the end of the whole alphabet
seguindo até o fim de todo alfabeto com o
- L14 with the number followed in this way
número seguido desta maneira
- L15 so that when you get to Br.^a A.^o M.^e J.^o it will
com que quando chegares a Br.^a A.^o M.^e J.^o virá a
- L16 touch and it is nº 495 and it will be clear.
tocar e é nº495 e ficará claro.
- L17 From understanding last paper nº4 whose words
De entender último papel nº 4 cujas palavras
- L18 and numbers follow this alphabet directly
e números seguem a este alfabeto diretamente
- L19 up to the manufacture of all this key.
até a chave de tudo esta se fabricam.

³⁸ Letter *V* refers to letter in Letterbook (1646).

³⁹ 'mei 1646' and '44' are both later annotations written in lead pencil.

⁴⁰ Here De Pina forgot to indicate that the Word to number two is AO.

C1	C2	C3
n° 101	A...	The 1
n° 102	ao...	To 2
n° 103	as...	The 3
n° 104	até...	Until 4
n° 105	avendo...	Having 5
n° 106	sexta feira	Friday 6
n° 107	Alcatifa	Carpet 7
n° 108	angola..	Angola 8
n° 109	algunes...	Some 9
n° 110	acima...	Above 10
n° 111	a mesmas	The same
n° 112	Águas	Waters
n° 113	a tal	Thus/ the such
	<i>segue até o fim acima</i>	continues to the end above
L20	It is warned that the author to write his cipher almost always uses one <i>Adverta-se que o Autor para escrever sua cifra usa quase sempre uma</i>	
L21	less than the one he points out, because 474 is 473 and 352 is 351, as I will soon <i>menos da que aponta, porque 474 são 473, e 352 é 351 como logo</i>	
L22	show, and only a few rare times he uses right number and use <i>mostrarei e só algumas raras vezes usa ao justo, se assim lhe assi-</i>	
L23	this sign # and especially the number 201, which he always uses <i>ná-lo este sinal # e principalmente o n° 201 que sempre usa</i>	
L24	right to it when he wants to say (de). <i>ao justo, que quer dizer (de).</i>	
L25	Made of the Alphabet an index numbered all the words until the <i>Feito do alfabeto um index numerado de todas as palavras até o</i>	
L26	end there is that when it says 474 (that as I have said one <i>cabo, achar-se-á que quando diz 474 (que como tenho dito um</i>	
L27	less is 473 it means TEM and number 352 1 less means <i>menos, é 473 que dizer "tem". E numero 352, 1 menos que dizer</i>	
L28	HOLLANDEZES, and thus I will begin to decipher the last letter n°3 for <i>Holandeses, e assim começarei a decifrar a última carta n° 3 por</i>	
L29	being brief with the ciphers for better intelligence of the others. <i>ser breve com as cifras para melhor inteligência das outras</i>	
	[62-44 scan 2]	
L30	It is also necessary to warn that when using a thousand and so many that the thousand will be <i>Também é necessário advertir que quando usa mil e tantos, que o mil se há</i>	
L31	blurred. This is the attention of saying you will find by counting as well as it would be <i>de borrar, esta é atenção de dizer achereis contando bem muito como se</i>	
L32	said that you remember to blur the thousand and so when you find n° 1020 blurring <i>dissera que se lembrem de borrar o mil e assim quando se achar n° 1020, borrando</i>	
L33	the thousand so 1020 becomes 20 and when 1002 comes it is 2, which purpose is <i>o mil assim 1020 ficam 20 e quando vier 1002 são 2, o qual o propósito</i>	
L34	the same above if it is two or if it is the word n° 2 and in the units <i>mesmo em cima se são dous ou se é a palavras n° 2 e nas unidades</i>	
L35	it almost always uses the right. <i>quase sempre usa ao justo.</i>	
L36	The sign Br. ^a . A. ^o . M. ^{el} . 10 means Bras Afonso and Manoel João, <i>A firma Br.^a. A.^o. M.^{el}. 10 quer dizer Bras Afonso e Manoel João</i>	

- L37 who are on the other side, and he tells them to declare the letters
os quais estão da outra banda e a lhes manda que declarem as cartas
- L38 because, as they were here in his house a year ago,
porque como houvera um ano que estiveram aqui em sua casa, juntos
- L39 they communicated this invention of a cipher together.
ai comunicaram esta invenção de cifras.
- L40 When he lacks words that are not in the alphabet, like MEÇA,
Quando lhe falta palavra que não está no alfabeto, como “meça”,
- L41 ABRIL, BALANÇA, COMPANHEIRO and others, he puts the same
“abril”, “balança”, “companheiro” e, outras assim põe a mesma
- L42 word clearly in place of the cipher.
palavra claramente em lugar de cifra.

[Ciphertext 3]

- L43 Declaration of the letter n° 3 which is the last one from the beginning of May
Declaração da carta n° 3 que é a última do princípio de maio.

L44 The Dutch have six large ships of more than 20 pieces, one of

Code	474	352	1006	340	280	201	495	201	1020	387	1001	201
Plaintext	tem	hollandesses	6	navios	grandes	de	mais	de	20	pesas	hua	de
Plaintext normalised		holandeses								peças	uma	
Translation	has/ have	Dutch	6	ships	big/ large	of	more	of	20	pieces	one	of
Code rec.												
Plaintext rec.		ollandesses ⁴¹										
Translation rec.												

L45 10 pieces, 5 of 6 to 8 pieces, 4 of bronze of all few people.

Code	1010	387	1005	201	1006	4	1008	387	1004	164	201	473	385	278
Plaintext	10	pesas	5	de	6	ate	8	pesas	4	brouie	de	todas	pouca	gente
Plaintext normalised		peças				até		peças		bronze				
Translation	10	pieces	5	of	6	until	8	pieces	4	Brass	of	all	few	people
Code rec.														
Plaintext rec.														
Translation rec.														

L46 Recife with the other parts are as told. Fort Taboada [2. Kyk in de Pot] has more fortification.

Code	415	170	3	201	495	353	253	172	289	207	258	476	474	495	269
Plaintext	recifo	com	as	de	mas	partes	este	como	lhe	ditto	forte	taboada	com	mais	fortificacion
Plaintext normalised	Recife				mais					dito		tabuada			
Translation	Recife	with	the	of	more	parts	this	how	you	said	fort	board / timber / plank	with	more	fortification
Code rec.															
Plaintext rec.									he ⁴²				tem ⁴³		
Translation rec.									is				has/ have		

L47 A boat came from Angola in 25 days of travel. It gives news that they have little to

Code	488	201	8290	{empty}	154	{empty}	{empty}	1025	206	201	491	203
Plaintext	veio	de	angola	hu	hun	barco	em	25	dias	de	viasem	da

⁴¹ Fits in range of letter O in Portuguese pronunciation.

⁴² Plaintext error. Code was '289 lhe'. Should read '289 [h]é'.

⁴³ Plaintext error based on frequency. Code was '474 com' (count 1). Should read '474 tem' (count 15).

Plaintext normalised				um	um						viagem	
Translation	came	of	Angola	one	one	boat	in	25	days	of	voyag e	of
Code rec.			8 ⁴⁴	290 ⁴⁵		160 ⁴⁶	232 ⁴⁷					
Plaintext rec.					bastimento ⁴⁸							
Translation rec.					supply							

Code	342	404	288	367	404
Plaintext	noticia	q[ue]	ha	pouco	q[ue]
Plaintext normalised			há		
Translation	news	what / which / that	has/ have	little	what / which / that
Code rec.					
Plaintext rec.					
Translation rec.					

L48 eat. There are 4 big ships, 2 patachos walking on the coast. The governor is imprisoned

Code	171	474	1004	340	280	1002	398	404
Plaintext	comer#	tem	4	navios	grandes	2	pataxos	q[ue]
Plaintext normalised							patacho	
Translation	eat	has/have	4	ships	big/large	2	patacho	what / which / that
Code rec.								
Plaintext rec.								
Translation rec.								

Code	falta	345	174	235	370/ 360	287
Plaintext	andao	na	costa#	esta	preso	gouvernador
Plaintext normalised	andam			está		governador
Translation	walk / go to	in	coast	is	arrested	governor
Code rec.						
Plaintext rec.						
Translation rec.						

Attention - begin!

The complete 'APPENDIX 4. De Pina (1646) translation and transcription' can be found at record 1861 in the Decode Database: <https://de-crypt.org/decrypt-web/RecordsView/1861>.

Attention - end!

⁴⁴ Code error. Code was '8290 angola'. Should read '8 angola' and '290 hu'.

⁴⁵ Code error. Code was '8290 angola'. Should read '8 angola' and '290 hu'.

⁴⁶ Code error. Code was '{missing code} barco' (count 1). Should read '160 barco' (count 1).

⁴⁷ Code error. Code was '{missing code} em' (count 1). Should read '232 em' (count 5).

⁴⁸ Plaintext error. Code was '154 hun' (count 1). Should read '154 bastimento' (count 1) in range of letter B.



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